



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,159	05/09/2001	Peijun Cong	2001-003	3966
321	7590	02/27/2004	EXAMINER DUONG, THO V	
SENNIGER POWERS LEAVITT AND ROEDEL ONE METROPOLITAN SQUARE 16TH FLOOR ST LOUIS, MO 63102			ART UNIT 3743	PAPER NUMBER

DATE MAILED: 02/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/852,159	Applicant(s) CONG ET AL.	
	Examiner Tho v Duong	Art Unit 3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 27-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14 and 16-18 is/are rejected.
- 7) ☒ Claim(s) 13, 15 and 19-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-26, drawn to a cooling apparatus, classified in class 165, subclass 86.
- II. Claims 27-30, drawn to method of cooling with a step of performing electrophoresis, classified in class 204, subclass 451.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the apparatus can be utilized to cool a flow injection analysis device. In addition, the process can be performed with an apparatus not having a light allowing window opening, such as with conductivity based capillary electrophoresis detection.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

This application contains claims directed to the following patentably distinct species of the claimed invention: the species are identified as the species A of figures 1-16 and species B of figure 17-24.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Mr. Brian Klien on 2/2/2004 a provisional election was made with traverse to prosecute the invention of group I and species B of figures 17-24, claims 1-26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 27-30 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

Claim 21 is objected to because of the following informalities: the limitation of "boro" appears to be a typographical error of "boron nitride". Appropriate correction is required.

Claim 19 is objected to because of the following informalities: It is suggested that the limitation of "the jacket members" in line 7 and 9 should change into "the inner jacket members" and "the jacket members" in line 15 and 16 change into "the outer jacket members" so that there would be no confuses between the inner jacket members and the outer jacket members within the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12,14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karger et al. (US 5,085,757) in view of Morris et al. (US 6,103,081) and Cauchy (US 4,520,305). Karger et al. discloses (figures 1-5 and column 16, lines 21-36) an apparatus for cooling a capillary tube (12) to prevent overheating of the tube during a parallel capillary

electrophoresis procedure, the apparatus comprising an inner jacket includes mating jacket members (28,28') made out of an ceramic-like material such as boron nitride which has a thermal conductivity in the range of about 5-50 W/m-k and a dielectric strength in the range of about 20-400 KV/mm. Karger discloses (figures 3,4) that the jacket members (28,28') are in open position in which the jacket members are separated to allow placement of the tube in the jacket and a closed position in which the jacket member are mated together and the tube is disposed inside the jacket in thermal conductive relation with the jacket, and window openings (38,40) in the mating jackets member defining a window to permit the passage of light through the window and the capillary tube at the location of the window; the jacket members (28,28') are a pair of opposing slabs wherein each slab has a recess (36) to form a channel shape for the slabs; an outer jacket (30) around the inner jacket and in thermally conductive relation therewith; a heat sink (32,34) attached to the outer jacket members; the outer jacket (30) and the inner jacket (28) have approximately equal lengths and are elongated or slandered for covering a major portion of the length of the tube (12). It appears in figure 1 that the jackets (28,30) extend over at least 50% of the overall length of the capillary tube. Karger further discloses (column 10, lines 37-40) that a thermally conductive paste material disposed between the capillary tube and the jacket members (28) to ensure a tight, thermally conducting pathway between the tube (12) and the jacket members (32). This paste material is considered to be read as a cushion of thermal conductive since it is in paste form and capable of performing a function as cushioning.

Karger does not disclose a bundle of capillary tubes being cooled by the cooling apparatus.

Morris et al. discloses (figure 2A and column 7, lines 40-49) a cooling apparatus for a capillary electrophoresis system that has two jacket members having grooves to accommodate a bundle of capillary tubes wherein the simultaneous use of many capillaries in a parallel array increases the overall throughput of electrophoresis. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Morris's teaching to increase the overall throughput of electrophoresis.

As regarding claim 11, Karger does not disclose that the jacket members have opposing surfaces coated with an electrically insulating material. However, Karger discloses (column 9, lines 50-60) that the jacket members are preferably to be made of electrical insulating material. For some application metallic conducting material can also be used.

Morris et al. discloses (column 3, lines 9-12) a cooling apparatus for capillary electrophoresis system that has two jacket members made out of metallic material such as aluminum and copper. Morris et al. further discloses (column 5, lines 35-38 and claim 1) that there is an insulation issue when operating the capillary electrophoresis cooling means is the electric insulation between the capillary tube and the metallic jacket. In response to this issue, Morris et al teaches to have an electrical insulative material coated on the surface of each groove of the metallic jackets that contacts the capillary tube to electrically insulate the tube from the jackets. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Morris' teaching to electrical insulate the tube from the metallic jacket.

As regarding claims 1, 9, and 10, Karger is silent if the jackets are movable and how the jackets are mounted together. Reference to Morris discloses (figure 2A) a phantom line which

appears to represent a mounting screw used to mount the jackets together in a movable manner. Furthermore, reference to Cauchy (figure 4a) discloses a cooling apparatus comprising jacket members (32a,b) sandwiched tubes (66) there between and the jackets are mounted together by screws (60) to make the jackets mounted together in a movable manner so that the tube is easy to be replaced or repaired. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Cauchy's teaching in Karger's device to make the jackets mounted together in a movable manner so that the capillary tube is easy to be replaced or repaired. Cauchy further teaches (column 6, lines 1-18) of a thermal grease (71) disposing between the tube and the jackets wherein this thermal grease has a conductivity of 60 BTU inch per square foot hour Fahrenheit (about 8 W.K-M) to ensure a better thermal contact between the tubes and the jackets. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Cauchy's teaching in Karger's cooling apparatus to ensure a better thermal contact between the tubes and the jacket.

Allowable Subject Matter

Claims 13 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 19-26 would be allowable if the objection requirements to claims 19 and 21 have been corrected accordingly.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cutie et al. (US 4,854,700) discloses a column holder for on-column photometric detection.

Wang (US 5,124,020) discloses an adjustable height and width aperture for capillary photodetector cell.

Kernan et al. (US 5,885,430) discloses capillary tube holder for an electrophoretic apparatus.

Burolla et al. (US 5,198,091) discloses a capillary cartridge for electrophoresis.

Daman et al. (US 4,177,858) discloses a heat exchanger that has a window for detecting any leakage.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tho Duong whose telephone number is (703) 305-0768. The examiner can normally be reached on from 9:30-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet, can be reached on (703) 308-0101. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.

TD

TD

February 17, 2004



Tho Duong

Patent Examiner.